UNITED STATES PATENT OFFICE.

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REGULATED FUEL-HEATING DEVICE.

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To all whom it may concern:

Be it known that I, JOSEPH A. WILLIAMS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Regulated Fuel-Heating Devices, of which the following is a full, clear, and exact description.

The present invention relates to a fuel heating and heat regulating device for use with internal combustion engines.

It is a well known fact that to obtain complete vaporization of gasolene or other fuel used in internal combustion engines a certain amount of heat is required, and the heavier the fuel, the higher the temperature at which it will be vaporized. It is also well known that the users of internal combustion engines, especially those employed in automobiles have considerable difficulty during cool weather, not only in starting the engine, but also in maintaining it in continuous successful operation.

The object of the present invention is to provide means for heating the fuel fed to the carbureter to a predetermined temperature which is maintained practically constant, and for automatically controlling the temperature to which the fuel is heated.

The above objects are accomplished by my invention in accordance with which there is arranged at some point in the fuel system the fuel heating and temperature regulating means. The latter may be arranged at different points in the system, but preferably between the carbureter and fuel tank, and in the preferred form of my invention, it is provided with a fuel chamber having an inlet connection with the fuel tank and an outlet connection with the carbureter, a heating chamber at least partially surrounding the fuel chamber and adapted to be connected with the exhaust or water system of the engine, and a temperature regulating device arranged adjacent the fuel chamber and adapted to control the supply of heating medium to said heating chamber.

My invention may be further briefly summarized as consisting in certain novel details of construction and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

In the accompanying drawings, Figure 1 is a view partly in section of a portion of a fuel feed system of an internal combustion engine, including the carbureter, the fuel supply tank, and my improved fuel heating and heat regulating device arranged between them; Fig. 2 is a vertical sectional view through the fuel heating temperature regulating device, the section being taken substantially along the line 2—2 of Fig. 3, and the lever for actuating the valve which controls the heating medium being omitted; Fig. 3 is a top plan view of the same with portions broken away.

Referring now to the figures of the drawings, A represents a carbureter for an internal combustion engine, and B the fuel tank from which gasolene or other fuel is supplied to the carbureter, both the carbureter and tank being of the usual or of any suitable construction.

In accordance with the present and preferred form of my invention, I arrange between the carbureter and tank, a fuel heating and temperature regulating device C, the purpose of which is first to heat the fuel to the desired temperature so that it will readily vaporize, regardless of the time of year that the engine is used, and regardless of how cold the gasolene and the surrounding atmosphere may be, and second, it is the purpose of the device of my invention to govern the heating to which the fuel may be submitted so that the fuel will at all times, and regardless of its thermic condition be brought to the desired temperature. This device C is provided with several chambers including a gasolene chamber c formed within a bowl-shaped casting c'. This casting has near the top a pair of oppositely disposed bosses c^2 having inlet and outlet openings c^3 communicating with the fuel chamber c. These openings are threaded to receive respectively an inlet or supply pipe c^5 connected to the tank B and an outlet pipe c^6 extending to the carbureter. As the inlet and outlet openings are near the top of the chamber c, the latter will be practically filled at all times with the liquid fuel.

Surrounding the rounded or bowl-shaped portion of the chamber c is a heating chamber d which is formed between the hemispherical wall of the chamber c and a hemispherical shell d'. An opening d^2 in the upper part of the casting c' and communicating with the chamber d has a connection for a supply pipe d^3 for a heating medium. This